



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,950	05/07/2002	Thomas Berger	18446.3	6579
7590 03/29/2004			EXAMINER	
Lichti Lempert & Lasch Bergwaldstr 1 Karlsruhe, D-76227 GERMANY			DOVE, TRACY MAE	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/914,950	Applicant(s) BERGER ET AL.	
	Examiner Tracy Dove	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-32, 34-44, 49, 50 and 52 is/are rejected.
- 7) ☒ Claim(s) 33, 45-48 and 51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/7/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 5/7/02 has been considered by the examiner.

Claim Objections

Claims 27, 28, 39, 43, 44, 46, 47 and 50 are objected to because of the following informalities: the claims recite improper group language. Claim 27 recites “at least one of metal deposition and alloy formation”, which should recite “at least one of metal deposition or alloy formation”. Claim 28 recites “at least one of a fabric, a texture, a grid, a net and a perforated sheet”, which should recite “at least one of a fabric, a texture, a grid, a net or a perforated sheet”. Claim 39 recites “one of plastic and synthetic thermoplastic”, which should recite “one of plastic or synthetic thermoplastic”. Claims 43 and 44 recite “at least one of welding, gluing and coating”, which should recite “at least one of welding, gluing or coating”. Claims 46 and 50 recite “at least one of a burled, gridded, netted and honeycombed structure”, which should recite “at least one of a burled, gridded, netted or honeycombed structure”. Claim 47 recites “at least one of a spongy and foamy structure”, which should recite “at least one of a spongy or foamy structure”. See MPEP 2173.05(h).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 27, 28, 30-32, 34-39, 40-44 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Pauling, WO 98/38686.

Note Pauling WO 98/38686 was not published in the English language. Therefore, Pauling, US 6,207,316, will be used to describe the teachings of Pauling WO 98/38686. See the front page of US 6,207,316 that shows the patent issued from the international application. The U.S. Patent should be a literal translation of the international application according to 371 rules, however, a translation of WO 98/38686 will be obtained.

Pauling teaches a rechargeable battery system having a plurality of electrodes in a electrolyte with a large-pored and a small-pored separator arrangement. At least one electrode has an electrochemically active coating provided with a surface profile, through which it is possible to reduce at least the structural and/or shape changes (accommodate volume changes) of the electrode during cyclic charging and discharging (abstract). Figure 1 shows an electrode 6a,8a having a large-pored separator 7b surrounding the electrode. A small pored-separator 7a (spacer) cover the surface of the electrode and is located between the electrode and the large-pored separator. Figure 4B shows the electrode may further comprise webs or beams 11 which

Art Unit: 1745

constitute an additional measure for suppressing a volume increase and shape changes to the electrochemically active coating (electrode) (9:32-47). The small-pored separator can be made from polyethylene, polypropylene or polyolefins (electrically insulating) and has a small pore size (textured) (6:28-35). The large-pored separator is made from an electrically nonconductive material (5:65-67). In principle all nonconductive materials or material combinations can be used, which are substantially chemically inert under operating and recharging conditions. Thus, organic plastics, inorganic polymer, sintered materials, ceramics or glasses may be used as the separator material (10:44-51).

Thus the claims are anticipated.

»

Claims 27, 29, 31, 32, 34-39, 42-44, 49, 50 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Bohnstedt et al., US 2003/0129486 A1.

Bohnstedt teaches a battery separator for a lead acid battery which comprises a porous sheet having a center area and side areas and which is provided with a plurality of studs on at least one side of the sheet and additionally comprises at least one continuous vertical rib in the center area of the same side of the sheet (abstract). Figure 2 shows an electrode 7 and a porous separator sheet 2 which surrounds the electrode 7. The separator includes studs 3 (burls) and ribs 4 covering at least a portion of the surface of the electrode 7. The side edge portions 6 of the separator sheet 2 are sealed, for example by welding (0013, 0030). The sheet is preferably made of a synthetic resin such as a polyolefin or polyvinyl chloride (0014). The studs and/or ribs (spacers) may be integrally formed of the same material as the separator sheet (0026). At least

Art Unit: 1745

one rib (spacer) may be applied to the electrode plate (claim 9). The separators can also comprise a plurality of closely spaced ribs in the lateral side are of the separator sheet (0028).

Thus the claims are anticipated.

Allowable Subject Matter

Claims 45-48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the claims are directed toward an electrode device having an electrode, a porous separator surrounding the electrode and an electrically insulating spacer wherein the spacer covers at least a portion of at least one surface of the electrode. The electrode and the spacer are formed as one single piece and the spacer has an electrically insulating coating.

The prior art does not teach a unitary electrode/spacer structure that is enveloped in a separator. The claims require that the electrode have a surface structure, formed unitarily with the electrode, that spaces the electrode from the surrounding separator. Bohnstedt teaches forming an electrode and then applying a spacing rib to the electrode. However, Bohnstedt does not teach forming the electrode and spacer as a single structure. One of skill would not have been motivated to form the electrode and spacer as a single structure due to difficulty in manufacturing such an electrode structure.

Claim 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the claims are directed toward an electrode device having an electrode, a porous separator surrounding the electrode and an electrically insulating spacer wherein the spacer covers at least a portion of at least one surface of the electrode. The spacer comprising an electrically insulating frame covering the outer edges of the electrode.

The prior art does not teach the claimed electrode device having a spacer comprising an electrically insulating frame covering the outer edges of the electrode. McBreen (US3,876,470) teaches an insulating frame 12 covering an outer edge of an electrode, however, McBreen does not teach that the insulating frame is located between the electrode and an envelope separator (separator surrounding the electrode). McBreen does not teach or suggest providing a frame spacer between an electrode and a separator surrounding the electrode.

Claim 51 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the claims are directed toward an electrode device having an electrode, a porous separator surrounding the electrode and an electrically insulating spacer wherein the spacer covers at least a portion of at least one surface of the electrode. The separator and spacer are formed as a single piece and at least one side of the separator facing the electrode has a spongy or foamy structure.

The prior art does not teach or suggest the claimed electrode device having a separator and spacer formed as a single piece wherein at least one side of the separator facing the electrode has a spongy or foamy structure. The spacers of Bohnstedt provide structural stability to the

Art Unit: 1745

separator, thus, one of skill would not have been motivated to use a spongy or foamy structure for the separator due to decreased structural stability.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gillibrand et al. US 3,862,862 teaches a separator envelope with venting means.

Howard et al. US 6,051,038 teaches a lithium secondary cell having an electrode enveloped in a separator. Howard does not teach the spacer of the instant claims.

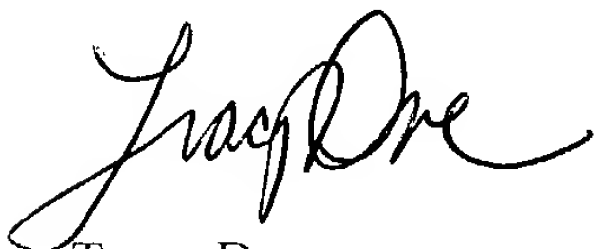
Yamashita et al. US 6,387,564 teaches a layer of insulating material particles coated on an electrode. Yamashita does not teach a separator surrounding the electrode.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tracy Dove
Patent Examiner
Technology Center 1700
Art Unit 1745

March 22, 2004